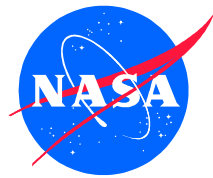


# An Alternative Method of Producing Rhenium Combustion Chambers



*Rhenium Alloys, Inc.  
Elyria, OH*

## **INNOVATION**

Manufacturing of large diameter high-density rhenium tubes

## **ACCOMPLISHMENTS**

- ◆ Obtaining a sintered density of greater than 95% of theoretical, and HIPed large rhenium tube shells without a canning step to densities greater than 98%
- ◆ Development of a manufacturing method with product improvement at lower cost
- ◆ Reduce time and cost in the production of large diameter high-density rhenium and rhenium alloy tubes

## **COMMERCIALIZATION**

- ◆ Orders of \$150-200K per year initially are expected for these tubes, which are precursors to thrusters
- ◆ This innovation will reduce the cost of bimetallic rings produced via explosive bonding as well as crucibles for the nuclear industry
- ◆ Rhenium Alloys has increased job equivalents by 1.0, which is directly associated with this SBIR
- ◆ Rhenium and rhenium alloy tube sales are expected to be substantial after completion of this Phase II SBIR, which includes a no cost extension for the production of near net shape components



***Fabricated large HIPed rhenium tube shells with a density >98%***

## **GOVERNMENT/SCIENCE APPLICATIONS**

- ◆ NASA requires rhenium for many space applications such as solar thermal propulsion and liquid fueled thrusters for satellites
- ◆ Various DoD agencies require lower cost production methods for several rhenium applications such as tactical missile components and other high temperature or thermally cycled parts